



## A review of *Iotasperma* (Asteraceae: Astereae)

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### Introduction

The genus *Iotasperma* G.L.Nesom (Nesom 1994) was erected for two endemic Australian species that were previously classified in the genus *Erigeron* L. Nesom (loc. cit.) showed quite clearly that these species were misplaced in *Erigeron*, and that they differed significantly from the related Australian genera *Vittadinia* A.Rich., *Ixiochlamys* F.Muell. ex Sond., *Dichromochlamys* Dunlop, *Peripleura* (N.T.Burb.) G.L.Nesom and *Camptacra* N.T.Burb. Nesom's treatment, while establishing the need for a new genus, and satisfying the nomenclatural requirements, is deficient in several ways: there were no descriptions for the species, no types were seen and no lectotypes chosen, there was no key to species, no distribution map, no specimens cited and the illustration of the pappus is misleading and attributed to the wrong species.

In this paper, comprehensive species descriptions, specimen citations and an identification key are provided for the first time, and both species names are lectotypified. A distribution map is provided, and both species are illustrated.

Although not stated by Nesom (1994), *Iotasperma* appears to differ from all of the genera mentioned above by the uniseriate pappus, the very small achenes, and the very short ligules of the ray florets. These characters are sufficient to diagnose and circumscribe the genus.

### Abstract

This paper provides species descriptions, specimen citations, identification key and illustrations for two species of the genus *Iotasperma* G.L.Nesom, namely *I. australiense* G.L.Nesom and *I. sessilifolium* (F.Muell.) G.L.Nesom. Both species names are lectotypified, and a distribution map is included.

**Keywords:** lectotype, identification key, illustration.

## Materials and methods

The paper is based on a morphological examination of specimens at BRI, specimens received on loan from MEL, NT, DNA and PERTH, specimens examined at NSW in January 2018, images of a specimen at CANB, and an image of a type from K (Herbarium Catalogue 2018). All measurements are based on dried material, except for the florets, which were measured from material reconstituted in boiling water.

## Taxonomy

***Iotasperma* G.L.Nesom, *Phytologia* 76: 144 (1994).**

**Type:** *I. australiense*.

Annual herbs. *Stems* ± terete, but with faint longitudinal ridges extending from the base of each leaf, sessile oil glands absent. Leaves alternate, sessile. *Capitula* terminal, in corymbose or paniculate clusters, pedunculate, peduncle with a few leaf-like bracts along its length. *Involucral bracts* entire, outer bracts green, inner bracts white to pale yellow. *Receptacle* flat to slightly convex, without paleae. Ray florets multiseriate, female, corolla tube glabrous; ligules tightly coiled on dried material. *Disc florets* bisexual, yellow; corolla tube glabrous; anthers not basally caudate. Anthers strongly flattened, with broad glabrous thickened lateral ribs; surface with numerous antrorse transparent twin-hairs throughout; carpogonium conspicuous. Pappus a single whorl of barbellate bristles, fused at the base.

**1. *Iotasperma australiense* G.L.Nesom, *Phytologia* 76: 146 (1994), as 'australiensis'**

*Erigeron ambiguus* F.Muell., Trans. Proc. Philos. Inst. Victoria 3: 58 (1859), *nom. illeg. non* Nuttall (1818). **Type:** QUEENSLAND. Gilbert River, 1856, *F. Mueller* (lecto: MEL 1553030, here chosen; isolecto: K 000890331).

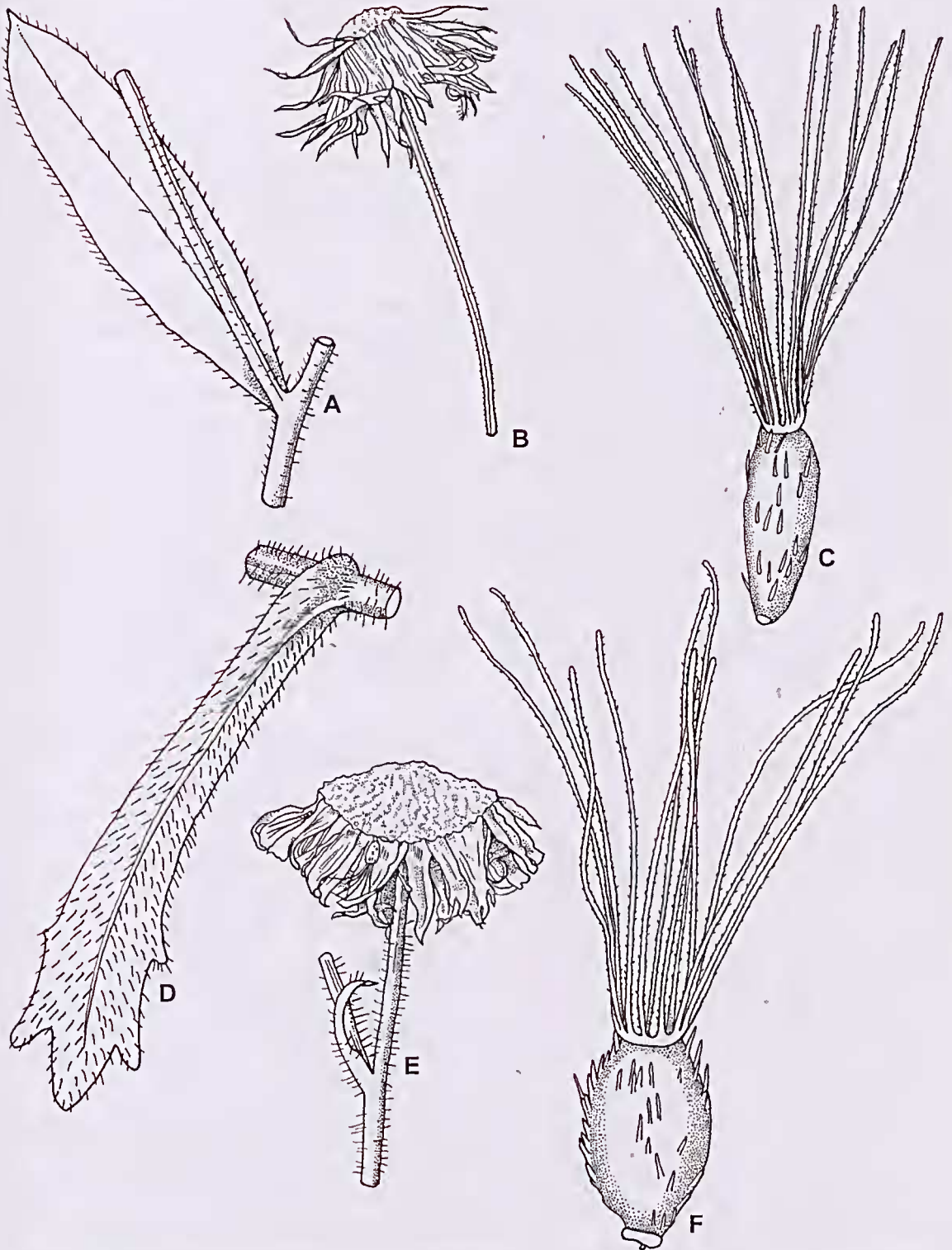
Erect herb to 45 cm high. *Stems* with sparse indumentum of patent eglandular hairs to 0.3–0.5 mm long, and a

dense covering of shorter gland-tipped hairs. *Leaves* elliptic to lanceolate or oblanceolate, 9–36 mm long, 2–11 mm wide, oil glands absent; apex acute; base cuneate; margins entire or sparsely dentate, with teeth 0.2–2.0 mm long; venation obscure or faintly visible throughout, mostly penninerved, but parallel-veined near base; dense indumentum of patent glandular hairs on both surfaces. *Capitula* 4–5 mm long, 6–8 mm diameter. Peduncles 12–32 mm long, with dense glandular hairs 0.05–0.10 mm long. *Involucral bracts* 30–40, graduated in length, 3–5-seriate; outer bracts linear to narrowly-lanceolate, 2.1–2.8 × 0.3–0.4 mm, with many short glandular hairs on outer surface, apex acute to acuminate; inner bracts linear, 3.5–3.7 × 0.3–0.4 mm, sparsely glandular on outer surface, apex ciliate. *Receptacle* 2.3–3.6 mm across. *Ray florets* 60–100, corolla tube 1.9–2.1 mm long; ligules 0.8–1.4 mm long, white, apex obtuse. *Disc florets* 7–10, corolla tube 2.2–2.4 mm long, corolla lobes c. 0.25 mm long, acute. *Achenes* narrowly obovate in outline, 0.9–1.0 mm long, 0.35–0.40 mm wide. *Pappus* bristles 14–20, each 2.2–2.3 mm long; barbellae c. 0.05 mm long. (Figure 1a–c).

**Selected specimens examined:** WESTERN AUSTRALIA. Kimberley. King River road, 7.8 km N of Gibb River road, El Questro, 19.vi.2008, G. Byrne 3410 (PERTH); between Picaninny car park and Western Creek, 13.vi.1993, I. Solomon 804 (PERTH); 1 km SW of camp at Diversion Dam, Kingston Rest, 16.vii.2001, D. Edinger DJE2595 (PERTH); Mount Elizabeth track to Munja, 28.vii.1996, K.F. Kenneally 11816 (PERTH); Bungle Bungle; massive above Picaninny Gorge, 5.vii.1989, K. Menkhurst 463 (DNA, PERTH); New Cockatoo sand site, CSIRO Kununurra, 7.vii.1978, M.H. Andrew 94 (CANB, DNA, NT). NORTHERN TERRITORY. 3.4 km along Edith Falls road, NW of Katherine, 28.v.2005, A.R. Bean 23918 (BRI, DNA); 20 miles [32 km] W of Borroloola Station, 26.vii.1948, R.A. Perry 1773 (BRI, DNA); Cox River station, 23.vii.1977, P.K. Latz 7214 (DNA, NT); Spirit Hills Conservation area, N of Nancy's Gorge, 25.viii.1996, I. Cowie 7238 & C. Boehme (DNA, MEL); Limmen N.P., Billengarah block, in valley at W edge of Tawallah Range, 6.viii.2009, B.M. Stuckey 437 (DNA); west side of Skull Island, Pellew Islands, 10.viii.2009, J. Westaway 3066 (DNA); Keep River N.P., 14.viii.2008, K.G. Brennan 7798 (DNA). QUEENSLAND. Burke District: Adels

### Key to the species of *Iotasperma*

- 1 Leaf bases cuneate; upper leaves usually entire; receptacle 2.3–3.6 mm across; peduncle with short glandular hairs only.....*I. australiense*
- 1: Leaf bases amplexicaule or obtuse; upper leaves toothed; receptacle 4.5–7.0 mm across; peduncle with predominantly long eglandular hairs, and some short glandular hairs.....*I. sessilifolium*



**Figure 1.** a-c. *lotasperma australiense* (Cumming 24470, BRI AQ739926). a. leaf  $\times 4$ ; b. peduncle, receptacle and involucre bracts  $\times 4$ ; c. achene and pappus  $\times 30$ . d-f. *lotasperma sessilifolium* (Latz 14697, MEL0279545A). d. leaf  $\times 4$ ; e. peduncle, receptacle and involucre bracts  $\times 4$ ; f. achene and pappus  $\times 30$ .



Grove, via Camooweal, 22.vi.1950, A. de Lestong 481 (BRI); Bowthorn Station, 7.vi.2009, R. Booth LH15-18 & D. Kelman (BRI). Cook District: 28.9 km by road W of Wakooka Outstation, 27.x.2006, K.R. McDonald 5932 et al. (BRI); Horseshoe Lagoon entrance road, Lakefield N.P., 24.vii.2010, K.R. McDonald 9661 & J. Covacevich (BRI); Kutcher Station, c. 70 km NE of Croydon, 21.ix.2006, R. Cumming 24470 (BRI). North Kennedy District: Sawpit Creek, White Mountains N.P., 23.vii.1992, A.R. Beon 4820 (BRI). South Kennedy District: c. 35 km E of Lake Buchanan, 17.vi.1998, E.J. Thompson BUC2064 & G.P. Turpin (BRI).

**Distribution and habitat:** Endemic to Australia. Occurring in the Kimberley region of Western Australia, the "Top End" of the Northern Territory, and northern Queensland, as far east as Lake Buchanan (Figure 2). It grows on sandy soils in open eucalypt woodland. Sites are typically seasonally damp, but not swampy.

**Phenology:** Flowering and fruiting specimens have been collected from May to September.

**Conservation status:** A very widespread species. A conservation coding of Least Concern is recommended (IUCN 2012).

**Notes:** Apart from the differences cited in the key below, *I. australiense* differs from *I. sessilifolium* by the inner involucre bracts 0.3–0.4 mm wide (0.6–0.9 mm

wide for *I. sessilifolium*), the 7–10 disc florets (27–36 for *I. sessilifolium*), and the narrower achenes, 2.5–3 times longer than wide (c. 2 times longer than wide for *I. sessilifolium*).

This species is sometimes misidentified as *Blumea diffusa* R.Br. ex Benth. or *B. integrifolia* DC., as the plant size, capitulum size and involucre bracts are similar. However, the female florets of *Blumea* spp. are not ligulate.

## 2. *Iotasperma sessilifolium* (F.Muell.) G.L.Nesom, *Phytologia* 76: 146 (1994), as '*sessilifolia*'

*Erigeron sessilifolius* F.Muell., *Fragm.* 11: 100 (1880). **Type:** NORTHERN TERRITORY. Depot Pool [SW of Mataranka], 1879, A. Forrest s.n. (lecto, here chosen: MEL1553028; isolecto: MEL1553026, NSW569017).

[*Erigeron ambiguus*, Lawrence (1992, p. 945), misapplied]

**Illustrations:** Jessop 1981, *Flora of Central Australia*, p. 376, fig. 475, as *Erigeron sessilifolius*; Cooke 1986, *Flora of South Australia* Part 3, p. 1467, as *Erigeron sessilifolius*; Lawrence 1992, figs. 268, 288, as *Erigeron ambiguus*; Nesom 1994, p. 145, as *Iotasperma australiense*.

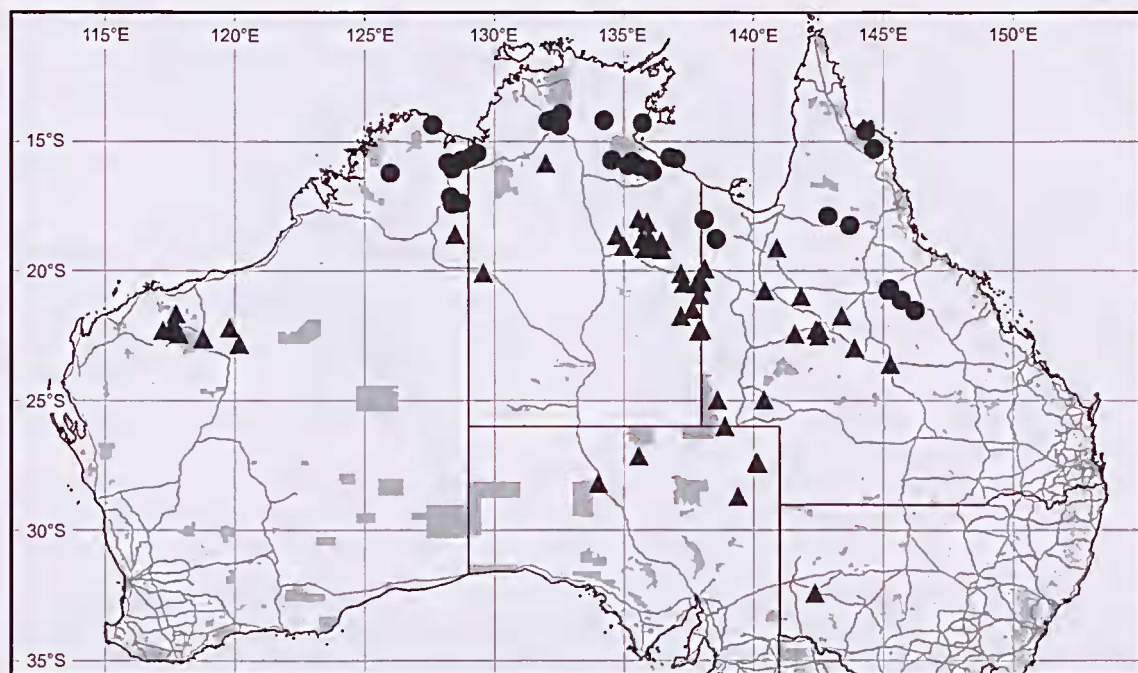


Figure 2. Distribution of *Iotasperma australiense* (circles) and *I. sessilifolium* (triangles).

Decumbent or erect herb to 30 cm high. *Stems* with dense indumentum of patent eglandular hairs 0.9–1.5 mm long, and a sparse covering of shorter gland-tipped hairs. *Leaves* oblanceolate, 14–61 mm long, 4–15 mm wide, oil glands absent; apex acute; base obtuse to amplexicaule; margins conspicuously dentate, with teeth 1–3 mm long; venation obscure; dense indumentum of antrorse eglandular hairs on both surfaces. *Capitula* 4.5–6.0 mm long, 8–9 mm diameter. Peduncles 8–30 mm long, with dense eglandular hairs 0.5–0.8 mm long and moderately dense glandular hairs 0.05–0.10 mm long. *Involucral bracts* 30–40, subequal in length, 2–4-seriate; outer bracts narrowly-elliptic, 2.5–3.6 × 0.5–0.7 mm, with short glandular hairs and longer eglandular hairs on outer surface, apex acuminate; inner bracts narrowly-elliptic, 2.9–4.1 × 0.6–0.9 mm, sparsely glandular on outer surface, apex acuminate, margins hyaline. *Receptacle* 4.5–7.0 mm across. *Ray florets* 60–100, corolla tube 1.5–2.1 mm long; ligules 1.3–2.0 mm long, lilac to blue or white, apex minutely retuse. *Disc florets* 27–36, corolla tube 2.4–2.7 mm long, corolla lobes 0.3–0.4 mm long, acute. *Achenes* elliptical in outline, 0.8–1.0 mm long, 0.4–0.5 mm wide. *Pappus* bristles 14–20, each 1.8–2.3 mm long; barbellae c. 0.05 mm long. (Figure 1d–f).

*Selected specimens examined:* **WESTERN AUSTRALIA.** Munjina Claypan, Juna Downs station, 15.ix.199B, *S. van Leeuwen* 3888 (DNA, PERTH); c. 17.8 km W of intersection of Nanutarra to Munjina road and Hamersley road, 12.viii.2011, *E. Ridley & B. Morgon* BESER015 (BRI, PERTH); 0.9 km west from the Wittenoon to Nanutarra road on the track to Pindering Well, Hamersley Station, 2.ix.1991, *M.E. Trudgen* MET10649 & *S.M. Maley* (PERTH); Silvergrass Plain, 71 km NW of Tom Price, 11.ix.2007, *E. Thomo* ET1377 (PERTH); c. B km N of Ethel Creek homestead, 2B.viii.1995, *A.A. Mitchell* PRP449 (PERTH); 18 km NE of Bonnie Creek homestead and 19 km SW of Nullagine, 22.viii.2008, *B. Morgon* BMor1385 (PERTH). **NORTHERN TERRITORY.** Sanctuary Swamp, 4.vii.1980, *J.R. Moconochie* 2459 (BRI, DNA, NT); 26 mile waterhole, Austral Downs Station, 20.vii.1971, *N. Henry* 271 (BRI, NSW, NT); Tobermory homestead, 21.v.1972, *C. Dunlop* 2557 (BRI, NSW, NT); Brunette Downs homestead, 25.viii.1985, *P.K. Lotz* 10093 (DNA, MEL, NT); Button Waterhole, Gordon Downs station, 20.vii.1973, *P.K. Latz* 4015 (DNA, NSW, NT, PERTH); Connells Lagoon Reserve, 24 Aug 1989, *B.G. Thomson* 3333 (DNA, NT); Shady camp stock yards, Burrumurra, 20° 28'S 137° 18'E, 1B.viii.1983, *B.G. Thomson* 434 (NT); No. 21 Bore, Alroy Downs, 26.vi.1975, *J. Must* 1436

(DNA); Lake Nash Waterhole, Lake Nash station, s.d., *B.W. Strong* 437 (DNA, NT). **QUEENSLAND.** Burke District: turnoff to Toorak Research Station, c. 40 km S of Julia Creek, 10.x.2007, *J. Silcock* 67 (BRI); bed of Flinders River crossing at Cleanskin Hut, 44.5 km N of Canobie HS, 6.viii.2004, *I.D. Fox* IDF3185 & *G. Wilson* (BRI); Cloncurry, s.d., *E. Palmer* 34 (BRI). Mitchell District: Barcardine, vii.197B, *G. Warren* s.n. (BRI, AQ315437); Morella, Longreach Shire, 3.vi.1994, *B.A. Fronzmann* BF32 (BRI). Gregory North District: Neuragully Waterhole, 'Monkira', c. 120 km SE of Bedourie, 7.v.2007, *A.R. Beon* 26316 (BRI, CANB, NSW). **NEW SOUTH WALES.** Kinchega National Park, billabong of Darling River, 16.v.1979, *K. Poijmons* 2754 (CANB).

**Distribution and habitat:** Endemic to Australia. Ranging from the Pilbara region of Western Australia, throughout the southern two-thirds of Northern Territory, northern South Australia, western New South Wales and the western half of Queensland, as far east as Barcardine (Figure 2). It grows in depressions, in swamps, on floodplains or around bores, in grassland or herbland communities. Soils are clays or clay-loams.

**Phenology:** Flowering and fruiting specimens have been collected from May to October.

**Conservation status:** A very widespread species. A conservation coding of Least Concern is recommended (IUCN 2012).

**Notes:** Mueller (1880) did not cite any specimens in the protologue for *Erigeron sessilifolius*, but a gathering by Alexander Forrest (now mounted on two sheets at MEL) was available to him before the publication date, and one label bears the notation '*Erigeron sessilifolius* n. sp.' in what appears to be Mueller's handwriting. This gathering matches the description in the protologue very well.

Nesom (1994) included an illustration of the pappus for *I. sessilifolium* (as *I. australiense*), where many bristles are less than 0.5 mm long, and some bristles almost completely lacking. These bristles have been damaged; undamaged pappus bristles are all equal in length, and 1.8–2.3 mm long. They are very fragile however, and broken bristles such as those illustrated by Nesom (1994) can often be found.

As the description and illustration of *Erigeron ambiguus* given in Lawrence (1992) are based on a specimen from Gordon Downs (Latz 4015, cited above), they are referable to *Iotasperma sessilifolium*.

## Acknowledgements

I thank the Directors of MEL, DNA, NT and PERTH for specimen loans of *Iotasperma*, and the Director of NSW for access to the collection. Will Smith (BRI) provided the illustrations and edited the distribution map. Brendan Lepschi kindly sent high quality images of a specimen at CANB.

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